

# SEQUENCE LISTING

<110> Crooke, Stanley T.  
Lima, Walter  
Wu, Hongjiang

<120> Methods of Using Mammalian RNase H and Compositions Thereof

<130> ISPH-0520

<150> US 09/684,254  
<151> 2000-10-06

<150> US 09/343,809  
<151> 1999-06-30

<150> US 09/203,716  
<151> 1998-12-02

<150> US 60/067,458  
<151> 1997-12-04

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<170> PatentIn version 3.0

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35 40 45

Ile Cys Tyr Cys Pro Leu Pro Arg Leu Ala Asp Leu Glu Ala Leu Lys  
50 55 60

Val Ala Asp Ser Lys Thr Leu Leu Glu Ser Glu Arg Glu Arg Leu Phe  
65 70 75 80

Ala Lys Met Glu Asp Thr Asp Phe Val Gly Trp Ala Leu Asp Val Leu  
85 90 95

Ser Pro Asn Leu Ile Ser Thr Ser Met Leu Gly Trp Val Lys Tyr Asn  
100 105 110

Leu Asn Ser Leu Ser His Asp Thr Ala Thr Gly Leu Ile Gln Tyr Ala  
115 120 125

Leu Asp Gln Gly Val Asn Val Thr Gln Val Phe Val Asp Thr Val Gly  
 130 135 140  
 Met Pro Glu Thr Tyr Gln Ala Arg Leu Gln Gln Ser Phe Pro Gly Ile  
 145 150 155 160  
 Glu Val Thr Val Lys Ala Lys Ala Asp Ala Leu Tyr Pro Val Val Ser  
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 Ala Ala Ser Ile Cys Ala Lys Val Ala Arg Asp Gln Ala Val Lys Lys  
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 Trp Gln Phe Val Glu Lys Leu Gln Asp Leu Asp Thr Asp Tyr Gly Ser  
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 Gly Tyr Pro Asn Asp Pro Lys Thr Lys Ala Trp Leu Lys Glu His Val  
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 Glu Pro Val Phe Gly Phe Pro Gln Phe Val Arg Phe Ser Trp Arg Thr  
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 Ser Ala Ser Glu Asn Gln Glu Gly Leu Arg Lys Ile Thr Ser Tyr Phe  
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 Ile Cys Tyr Cys Pro Leu Ser Arg Leu Ala Asp Leu Glu Ala Leu Lys  
 50 55 60  
 Val Ala Asp Ser Lys Thr Leu Thr Glu Asn Glu Arg Glu Arg Leu Phe  
 65 70 75 80  
 Ala Lys Met Glu Glu Asp Gly Asp Phe Val Gly Trp Ala Leu Asp Val  
 85 90 95

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 Val Leu Gly Ile Asp Glu Ala Gly Arg Gly Pro Val Leu Gly Pro Met  
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 Val Tyr Ala Ala Ala Ile Ser Pro Leu Asp Gln Asn Val Glu Leu Lys  
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 Asn Leu Gly Val Asp Asp Ser Lys Ala Leu Asn Glu Ala Lys Arg Glu  
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 Glu Ile Phe Asn Lys Met Asn Glu Asp Glu Asp Ile Gln Gln Ile Ile  
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 Ala Tyr Ala Leu Arg Cys Leu Ser Pro Glu Leu Ile Ser Cys Ser Met  
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 130 135 140  
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 145 150 155 160  
 Glu Lys Leu Phe Pro Gly Ile Ser Ile Cys Val Thr Glu Lys Ala Asp  
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 Ser Leu Phe Pro Ile Val Ser Ala Ala Ser Ile Ala Ala Lys Val Thr  
 180 185 190  
 Arg Asp Ser Arg Leu Arg Asn Trp Gln Phe Arg Glu Lys Asn Ile Lys  
 195 200 205  
 Val Pro Asp Ala Gly Tyr Gly Ser Gly Tyr Pro Gly Asp Pro Asn Thr  
 210 215 220  
 Lys Lys Phe Leu Gln Leu Ser Val Glu Pro Val Phe Gly Phe Cys Ser

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Cys Val Pro Gly Ser Trp Glu Asp Asp Glu Glu Glu Gly Lys Ser Gln						
		260		265		270
Ser Lys Arg Met Thr Ser Trp Met Val Pro Lys Asn Glu Thr Glu Val						
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Val Pro Lys Arg Asn Met Glu Ile Asn Leu Thr Lys Ile Val Ser Thr						
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Pro Ile Ile Met Gly Ile Asp Glu Ala Gly Arg Gly Pro Val Leu Gly						
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Pro Met Val Tyr Ala Val Ala Tyr Ser Thr Gln Lys Tyr Gln Asp Glu						
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Thr Ile Ile Pro Asn Tyr Glu Phe Asp Asp Ser Lys Lys Leu Thr Asp						
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Pro Ile Arg Arg Met Leu Phe Ser Lys Ile Tyr Gln Asp Asn Glu Glu						
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Leu Thr Gln Ile Gly Tyr Ala Thr Thr Cys Ile Thr Pro Leu Asp Ile						
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Ser Arg Gly Met Ser Lys Phe Pro Pro Thr Arg Asn Tyr Asn Leu Asn						
		115		120		125
Glu Gln Ala His Asp Val Thr Met Ala Leu Ile Asp Gly Val Ile Lys						
		130		135		140
Gln Asn Val Lys Leu Ser His Val Tyr Val Asp Thr Val Gly Pro Pro						
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Ala Ser Tyr Gln Lys Lys Leu Glu Gln Arg Phe Pro Gly Val Lys Phe						
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Thr Val Ala Lys Lys Ala Asp Ser Leu Tyr Cys Met Val Ser Val Ala  
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 Ser Val Val Ala Lys Val Thr Arg Asp Ile Leu Val Glu Ser Leu Lys  
 195 200 205  
 Arg Asp Pro Asp Glu Ile Leu Gly Ser Gly Tyr Pro Ser Asp Pro Lys  
 210 215 220  
 Thr Val Ala Trp Leu Lys Arg Asn Gln Thr Ser Leu Met Gly Trp Pro  
 225 230 235 240  
 Ala Asn Met Val Arg Phe Ser Trp Gln Thr Cys Gln Thr Leu Leu Asp  
 245 250 255  
 Asp Ala Ser Lys Asn Ser Ile Pro Ile Lys Trp Glu Glu Gln Tyr Met  
 260 265 270  
 Asp Ser Arg Lys Asn Ala Ala Gln Lys Thr Lys Gln Leu Gln Leu Gln  
 275 280 285  
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 Trp Tyr Arg  
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 35 40 45  
 Leu Ser Glu Lys Arg Arg Leu Ala Leu Tyr Glu Glu Ile Lys Glu Lys  
 50 55 60  
 Ala Leu Ser Trp Ser Leu Gly Arg Ala Glu Pro His Glu Ile Asp Glu  
 65 70 75 80  
 Leu Asn Ile Leu His Ala Thr Met Leu Ala Met Gln Arg Ala Val Ala  
 85 90 95  
 Gly Leu His Ile Ala Pro Glu Tyr Val Leu Ile Asp Gly Asn Arg Cys  
 100 105 110  
 Pro Lys Leu Pro Met Pro Ala Met Ala Val Val Lys Gly Asp Ser Arg  
 115 120 125

Val Pro Glu Ile Ser Ala Ala Ser Ile Leu Ala Lys Val Thr Arg Asp  
130 135 140

Ala Glu Met Ala Ala Leu Asp Ile Val Phe Pro Gln Tyr Gly Phe Ala  
145 150 155 160

Gln His Lys Gly Tyr Pro Thr Ala Phe His Leu Glu Lys Leu Ala Glu  
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His Gly Ala Thr Glu His His Arg Arg Ser Phe Gly Pro Val Lys Arg  
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Ala Leu Gly Leu Ala Ser  
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<311> 1998-12-02  
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35 40 45

Gln Val Asp Arg Phe Pro Ala Ala Arg Phe Lys Lys Phe Ala Thr Glu  
50 55 60

Asp Glu Ala Trp Ala Phe Val Arg Lys Ser Ala Ser Pro Glu Val Ser  
65 70 75 80

Glu Gly His Glu Asn Gln His Gly Gln Glu Ser Glu Ala Lys Pro Gly  
85 90 95

Lys Arg Leu Arg Glu Pro Leu Asp Gly Asp Gly His Glu Ser Ala Gln  
100 105 110

Pro Tyr Ala Lys His Met Lys Pro Ser Val Glu Pro Ala Pro Pro Val  
115 120 125

Ser Arg Asp Thr Phe Ser Tyr Met Gly Asp Phe Val Val Val Tyr Thr  
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Asp Gly Cys Cys Ser Ser Asn Gly Arg Arg Lys Pro Arg Ala Gly Ile  
 145 150 155 160  
 Gly Val Tyr Trp Gly Pro Gly His Pro Leu Asn Val Gly Ile Arg Leu  
 165 170 175  
 Pro Gly Arg Gln Thr Asn Gln Arg Ala Glu Ile His Ala Ala Cys Lys  
 180 185 190  
 Ala Ile Glu Gln Ala Lys Thr Gln Asn Ile Asn Lys Leu Val Leu Tyr  
 195 200 205  
 Thr Asp Ser Met Phe Thr Ile Asn Gly Ile Thr Asn Trp Val Gln Gly  
 210 215 220  
 Trp Lys Lys Asn Gly Trp Lys Thr Ser Ala Gly Lys Glu Val Ile Asn  
 225 230 235 240  
 Lys Glu Asp Phe Val Ala Leu Glu Arg Leu Thr Gln Gly Met Asp Ile  
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 <302> Molecular Cloning and Expression of cDNA for Human RNase H  
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 <307> 1998-\_\_-\_\_  
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 Arg Gly Arg Lys Thr Gly Val Phe Leu Thr Trp Asn Glu Cys Arg Ala  
 35 40 45  
 Gln Val Asp Arg Phe Pro Ala Ala Arg Phe Lys Lys Phe Ala Thr Glu  
 50 55 60

Asp Glu Ala Trp Ala Phe Val Arg Lys Ser Ala Ser Pro Glu Val Ser  
 65 70 75 80  
 Glu Gly His Glu Asn Gln His Gly Gln Glu Ser Glu Ala Lys Ala Ser  
 85 90 95  
 Lys Arg Leu Arg Glu Pro Leu Asp Gly Asp Gly His Glu Ser Ala Glu  
 100 105 110  
 Pro Tyr Ala Lys His Met Lys Pro Ser Val Glu Pro Ala Pro Pro Val  
 115 120 125  
 Ser Arg Asp Thr Phe Ser Tyr Met Gly Asp Phe Val Val Val Tyr Thr  
 130 135 140  
 Asp Gly Cys Cys Ser Ser Asn Gly Arg Arg Arg Pro Arg Ala Gly Ile  
 145 150 155 160  
 Gly Val Tyr Trp Gly Pro Gly His Pro Leu Asn Val Gly Ile Arg Leu  
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 Pro Gly Arg Gln Thr Asn Gln Arg Ala Glu Ile His Ala Ala Cys Lys  
 180 185 190  
 Ala Ile Glu Gln Ala Lys Thr Gln Asn Ile Asn Lys Leu Val Leu Tyr  
 195 200 205  
 Thr Asp Ser Met Phe Thr Ile Asn Gly Ile Thr Asn Trp Val Gln Gly  
 210 215 220  
 Trp Lys Lys Asn Gly Trp Lys Thr Ser Ala Gly Lys Glu Val Ile Asn  
 225 230 235 240  
 Lys Glu Asp Phe Val Ala Leu Glu Arg Leu Thr Gln Gly Met Asp Ile  
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 <302> Cloning, Expression and Mapping of Ribonucleases H of Human and  
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 <307> 1998-11-\_\_\_\_  
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35 40 45

Gln Val Asp Arg Phe Pro Ala Ala Arg Phe Lys Lys Phe Ala Thr Glu  
50 55 60

Asp Glu Ala Trp Ala Phe Val Arg Lys Ser Ala Ser Pro Glu Val Ser  
65 70 75 80

Glu Gly His Glu Asn Gln His Gly Gln Glu Ser Glu Ala Lys Ala Ser  
85 90 95

Lys Arg Leu Arg Glu Pro Leu Asp Gly Asp Gly His Glu Ser Ala Glu  
100 105 110

Pro Tyr Ala Lys His Met Lys Pro Ser Val Glu Pro Ala Pro Pro Val  
115 120 125

Ser Arg Asp Thr Phe Ser Tyr Met Gly Asp Phe Val Val Val Tyr Thr  
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Asp Gly Cys Cys Ser Ser Asn Gly Arg Arg Arg Pro Arg Ala Gly Ile  
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Gly Val Tyr Trp Gly Pro Gly His Pro Leu Asn Val Gly Ile Arg Leu  
165 170 175

Pro Gly Arg Gln Thr Asn Gln Arg Ala Glu Ile His Ala Ala Cys Lys  
180 185 190

Ala Ile Glu Gln Ala Lys Thr Gln Asn Ile Asn Lys Leu Val Leu Tyr  
195 200 205

Thr Asp Ser Met Phe Thr Ile Asn Gly Ile Thr Asn Trp Val Gln Gly  
210 215 220

Trp Lys Lys Asn Gly Trp Lys Thr Ser Ala Gly Lys Glu Val Ile Asn  
225 230 235 240

Lys Glu Asp Phe Val Ala Leu Glu Arg Leu Thr Gln Gly Met Asp Ile  
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Gln Trp Met His Val Pro Gly His Ser Gly Phe Ile Gly Asn Glu Glu  
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<300>  
 <301> Frank, Braunshofer-Reiter, Poltl and Holzmann  
 <302> Cloning, Subcellular Localization and Functional Expression of  
 Human RNase HII  
 <303> Biol. Chem.  
 <304> 379  
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Arg	Gly	Arg	Lys	Thr	Gly	Val	Phe	Leu	Thr	Trp	Asn	Glu	Cys	Arg	Ala
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Asp	Glu	Ala	Trp	Ala	Phe	Val	Arg	Lys	Ser	Ala	Ser	Pro	Glu	Val	Ser
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Glu	Gly	His	Glu	Asn	Gln	His	Gly	Arg	Glu	Ser	Glu	Ala	Lys	Ala	Ser
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Lys	Arg	Leu	Arg	Glu	Pro	Leu	Asp	Gly	Asp	Gly	His	Glu	Ser	Ala	Glu
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Pro	Tyr	Ala	Lys	His	Met	Lys	Pro	Ser	Val	Glu	Pro	Ala	Pro	Pro	Val
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Ser	Arg	Asp	Thr	Phe	Ser	Tyr	Met	Gly	Asp	Phe	Val	Val	Val	Tyr	Thr
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Asp	Gly	Cys	Cys	Ser	Ser	Asn	Gly	Arg	Arg	Arg	Pro	Arg	Ala	Gly	Ile
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Gly	Val	Tyr	Trp	Gly	Pro	Gly	His	Pro	Leu	Asn	Val	Gly	Ile	Arg	Leu
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Pro	Gly	Arg	Gln	Thr	Asn	Gln	Arg	Ala	Glu	Ile	His	Ala	Ala	Cys	Lys
			180					185					190		
Ala	Ile	Glu	Gln	Ala	Lys	Thr	Gln	Asn	Ile	Asn	Lys	Leu	Val	Leu	Tyr
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Trp Lys Lys Asn Gly Trp Lys Thr Ser Ala Gly Lys Glu Val Ile Asn  
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Lys Glu Asp Phe Val Ala Leu Glu Arg Leu Thr Gln Gly Met Asp Ile  
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<301> Frank, Braunshofer-Reiter, Wintersberger, Grimm and Busen  
<302> Cloning of the cDNA encoding the large subunit of human RNase HI, a  
homologue of the prokaryotic RNase HII  
<303> Proc. Natl. Acad. Sci. USA  
<304> 95  
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<307> 1998-10-27  
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Val Asp Glu Ala Gly Arg Gly Pro Val Leu Gly Pro Met Val Tyr Ala  
35 40 45

Ile Cys Tyr Cys Pro Leu Pro Arg Leu Ala Asp Leu Glu Ala Leu Lys  
50 55 60

Val Ala Asp Ser Lys Thr Leu Leu Glu Ser Glu Arg Glu Arg Leu Phe  
65 70 75 80

Ala Lys Met Glu Asp Thr Asp Phe Val Gly Trp Ala Leu Asp Val Leu  
85 90 95

Ser Pro Asn Leu Ile Ser Thr Ser Met Leu Gly Arg Val Lys Tyr Asn  
100 105 110

Leu Asn Ser Leu Ser His Asp Thr Ala Thr Gly Leu Ile Gln Tyr Ala  
115 120 125

Leu Asp Gln Gly Val Asn Val Thr Gln Val Phe Val Asp Thr Val Gly  
 130 135 140  
 Met Pro Glu Thr Tyr Gln Ala Gln Leu Gln Ser Phe Pro Gly Ile  
 145 150 155 160  
 Glu Val Thr Val Lys Ala Lys Ala Asp Ala Leu Tyr Pro Val Val Ser  
 165 170 175  
 Ala Ala Ser Ile Cys Ala Lys Val Ala Arg Asp Gln Ala Val Lys Lys  
 180 185 190  
 Trp Gln Phe Val Glu Lys Leu Gln Asp Leu Asp Thr Asp Tyr Gly Ser  
 195 200 205  
 Gly Tyr Pro Asn Asp Pro Lys Thr Lys Ala Trp Leu Lys Glu His Val  
 210 215 220  
 Glu Pro Val Phe Gly Phe Pro Gln Phe Val Arg Phe Ser Trp Arg Thr  
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 Ala Gln Thr Ile Leu Glu Lys Glu Ala Glu Asp Val Ile Trp Glu Asp  
 245 250 255  
 Ser Ala Ser Glu Asn Gln Glu Gly Leu Arg Lys Ile Thr Ser Tyr Phe  
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 <302> Cloning, Expression and Mapping of Ribonucleases H of Human and  
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35 40 45

Gln Val Asp Arg Phe Pro Ala Ala Arg Phe Lys Lys Phe Ala Thr Glu  
50 55 60

Asp Glu Ala Trp Ala Phe Val Arg Ser Ser Ser Ser Pro Asp Gly Ser  
65 70 75 80

Lys Gly Gln Glu Ser Ala His Glu Gln Lys Ser Gln Ala Lys Thr Ser  
85 90 95

Lys Arg Pro Arg Glu Pro Leu Gly Glu Gly Glu Glu Leu Pro Glu Pro  
100 105 110

Gly Pro Lys His Thr Arg Gln Asp Thr Glu Pro Ala Ala Val Val Ser  
115 120 125

Lys Asp Thr Phe Ser Tyr Met Gly Glu Ser Val Ile Val Tyr Thr Asp  
130 135 140

Gly Cys Cys Ser Ser Asn Gly Arg Lys Arg Ala Arg Ala Gly Ile Gly  
145 150 155 160

Val Tyr Trp Gly Pro Gly His Pro Leu Asn Val Gly Ile Arg Leu Pro  
165 170 175

Gly Arg Gln Thr Asn Gln Arg Ala Glu Ile His Ala Ala Cys Lys Ala  
180 185 190

Ile Met Gln Ala Lys Ala Gln Asn Ile Ser Lys Leu Val Leu Tyr Thr  
195 200 205

Asp Ser Met Phe Thr Ile Asn Gly Ile Thr Asn Trp Val Gln Gly Trp  
210 215 220

Lys Lys Asn Gly Trp Arg Thr Ser Thr Gly Lys Asp Val Ile Asn Lys  
225 230 235 240

Glu Asp Phe Met Glu Leu Asp Glu Leu Thr Gln Gly Met Asp Ile Gln  
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